

### **REMARKS**

Claims 1-9 are now pending in the application. Claims 1, 3-5, and 7-9 have been amended to clarify the invention as claimed. Support for these amendments is found in Applicants' specification as filed at Page 4 lines 14-19, Page 5 lines 1-3, Page 7 lines 6-11 and lines 23-25, for example. Applicants request entry of these amendments. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

### **REJECTION UNDER 35 U.S.C. § 102 AND § 103**

Claim 9 stands rejected under 35 U.S.C. § 102(b) as being anticipated by EP 0556649. Claim 9 has been amended to recite an ink that contains an insoluble dye.

EP 0556649 discloses triblock (ABC) copolymer ink dispersants, where the A portion is hydrophilic, the C portion provides stability with organic components (and is hydrophobic or hydrophilic) and the B portion is designed to specifically bind to particulate solid colorants, i.e., pigment particles. There is no disclosure, motivation, or suggestion to use any sort of water-insoluble dyes, and more particularly, there is no suggestion to use a dispersant designed for solubilizing such an insoluble dye. EP 0556649 fails to meet each and every limitation of Claim 9, and as such does not anticipate Claim 9. Accordingly, Applicants respectfully request withdrawal of the rejection and allowance of Claim 9.

Claims 1-4 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Courian et al. (U.S. Pat. No. 5,874,974) in view of Lin et al. (U.S. Pat. No. 5,531,818) and Coca et al. (U.S. Pat. No. 6,336,966). This rejection is respectfully traversed.

The Courian reference describes dispersants, including AB or BAB block copolymer. The Courian reference states that other dispersant alternatives include star polymers, which are less preferable than the triblock polymers (see Col. 30 lines 8-11). However, Courian employs such dispersants for pigment-based inks, but not for dye-based inks or more specifically insoluble dyes, as are now recited in amended independent Claims 1, 3, 4, and 9, as well as in dependent Claim 2. As such, Courian fails to provide any disclosure, suggestion, or motivation for using an insoluble dye in an ink composition, where a dispersant, particularly a star block polymer, is selected to solubilize the insoluble dye.

Neither the Lin nor Coca reference addresses the deficiencies of Courian to meet the invention as recited in Claims 1-4 and 9. Lin has no disclosure whatsoever of an amphiphilic star block polymer that serves to disperse a water-insoluble dye in a water based ink. Coca discloses a star polymer for use as a dispersant for an inorganic pigment (See Col. 17-18, for example). As such, the combination of Courian in view of Lin and Coca fail to disclose each and every limitation of the claims, and further none provide any motivation or suggestion to arrive at the invention as claimed in Claims 1-4 and 9. As such, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness, and request reconsideration and allowance of the rejected claims.

Claims 1-4 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Spinelli (U.S. Pat. No. 5,772,741) in view of Coca et al. (U.S. Pat. No. 6,336,966) and Hosmer (U.S. Pat. No. 6,436,178). This rejection is respectfully traversed.

Spinelli does not disclose an amphiphilic star polymer (or a humectant and a penetrant) in an ink composition. The Spinelli reference discloses an aqueous phase and a non-aqueous phase, where a dispersant disperses a pigment. Spinelli further provides that a water-insoluble dye can be contained in the non-aqueous phase. There is no guidance to use an amphiphilic star polymer to disperse a water-insoluble dye. The deficiencies of Coca discussed above are also applicable here. Likewise, Hosmer fails to disclose any dispersant at all, nonetheless an amphiphilic star polymer that disperses an insoluble dye in a water-based ink. Additionally, there is no motivation or suggestion to combine the Spinelli reference with Coca and/or Hosmer. As such, the burden of establishing a *prima facie* case of obviousness has not been met, and Spinelli, Coca, and Hosmer, standing alone or in combination do not render the invention as claimed in Claims 1-4 obvious. As such, Applicants respectfully request reconsideration and allowance of the rejected claims.

Claims 1-4 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP 1008634). This rejection is respectfully traversed.

EP 1008634 discloses an ink having a dispersant (having hydrophobic and hydrophilic portions) and a star polymer for stabilizing the pigment. EP 1008634 does not disclose an insoluble dye that is dispersed in a water-based ink by an amphiphilic star polymer. The EP 1008634 reference does not teach or suggest that the star polymer should have hydrophilic portions extending into an aqueous region of the ink, because it states that minimizing the hydrophilic portions associated with the pigment increases waterfastness. (See e.g., Paragraph 3). As such, EP 1008634 teaches away from invention recited in Claims 1-4, because one of the objects of the present invention

is to improve water resistance and print quality of the ink composition. As such, Applicants respectfully submit that the EP 1008634 reference fails to establish a *prima facie* case of obviousness, and Claims 1-4 contain patentable subject matter, and request reconsideration thereof.

Claims 5-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Spinelli (U.S. Pat. No. 5,772,741) in view of Hosmer et al. (U.S. Pat. No. 6,436,178) and Petersen et al. (U.S. Pat. No. 6,201,099). This rejection is respectfully traversed.

Claims 5-8 stand rejected as being obvious in light of Spinelli in view of the Hosmer and Petersen references. Independent Claims 5, 7, and 8 have been amended to recite that an amphiphilic heteroarm star polymer has a hydrophobic segment and a hydrophilic segment, where the hydrophilic segment disperses an insoluble dye in an ink composition. As discussed above, the Spinelli reference fails to disclose an amphiphilic heteroarm star polymer. More particularly, the Spinelli reference does not disclose or suggest that the heteroarm star polymer disperses an insoluble dye in the ink composition.

The Petersen discloses a heteroarm star polymer, however it has no disclosure of a use of a heteroarm star polymer to disperse any sort of colorant in an ink composition, nonetheless a water-insoluble dye. To establish a *prima facie* case of obviousness, it is essential that the Examiner find some motivation or suggestion to make the claimed invention in light of the prior art teachings. *In re Brouwer*, 37 USPQ.2d 1663, 1666 (Fed. Cir. 1996). Regardless of the type of disclosure, the prior art must provide *some* motivation to one of ordinary skill in the art to make the claimed invention in order to support a conclusion of obviousness. Applicants respectfully

maintain that the cited references do not suggest the combination of teachings necessary to arrive at the invention claimed in each of Claims 5-8. Of equal importance, there is nothing in these references that would motivate the skilled artisan to make such a combination, without the impermissible benefit of hindsight.

There is no evidence of any motivation or suggestion to combine Spinelli with Petersen, absent impermissible hindsight or speculation. Hosmer is silent as to any star polymer dispersant. As such, Applicants respectfully submit that no *prima facie* case of obviousness is established, and request reconsideration of Claims 5-8 and allowance thereof.

#### CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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HARNES, DICKEY & PIERCE, P.L.C.  
P.O. Box 828  
Bloomfield Hills, Michigan 48303  
(248) 641-1600  
GAS/kk

By: Gregory A. Stobbs  
Gregory A. Stobbs  
Reg. No. 28,764